





# Lake Restorer at Brigantine Cove

*"The goal of Living Technologies Corporation is to develop and commercialize wastewater treatment technology based on biology, ecology and traditional engineering. Our intent is that the Lake Restorer project will lead to the widespread application of efficient, ecologically-based treatment systems for dilute contamination found in water bodies and run-off and for the polishing of partially treated wastewater."*

Lorenz Schmidt  
President, Living Technologies Corporation  
Toronto, Ontario

## TECHNOLOGY DESCRIPTION

Living Technologies designs, constructs, and operates natural wastewater treatment facilities based on a whole systems approach to biological technology. These systems, called Living Machines, purify sewage, industrial wastewater and polluted bodies of water.

Living Machine treatment systems are designed to replicate the characteristics of natural ponds and marshes but to operate at an accelerated pace. Diverse communities of bacteria, algae and micro-organisms as well as numerous species of plants, trees, snails, fish and other living creatures live together as whole ecologies in tanks and living biofilters. Aided by the combination of sunlight and a managed environment, the micro-organisms eat the bacteria in the wastewater.

Living Machines are custom engineered according to waste stream and local conditions. The machines do not use chemicals and are not disruptive. They are mechanically simple, energy efficient, cost competitive and can be exceptionally beautiful.

The Lake Restorer is a Living Machine designed to treat dilute contaminants and nutrients. The restorer creates an environment which is rich in oxygen and able to purify huge volumes of water and either reduce or prevent noxious odors. The restorer:

- \* circulates water at a high rate;
- \* aerates the circulating water;
- \* circulates water over vast bacterial surfaces in the ecological fluidized bed cells which filters out algae (then eaten by filtering animals such as clams and mussels) as well as converts pollutants and excess nutrients to safe end products.



*Flax Pond Lake Restorer during early planting stage.*

## THE COMPANY

Living Technology Corporation is a Canadian company which specializes in ecological engineering. The company's chief biological consultant is John Todd, Ph.D., a Canadian marine biologist who has been applying ecological thinking to environmental problems for more than 25 years. He is the founder of Ocean Arks International, a non-profit organization located in Cape Cod and Living Technologies Inc. of Vermont.

## THE CHALLENGE

Several years ago, Ontario Place, a recreation and entertainment complex on Toronto's waterfront, decided to build a beach at Brigantine Cove. Living Technologies chose this site for a feasibility study for using a Lake Restorer Living Machine to meet the needs of Ontario Place.

The project's short term goal is to meet swimming quality standards for pathogenic bacteria and drinking water standards for contaminants. The long-term goal is to improve the habitat for fish and other aquatic life, to increase biological activity in Brigantine Cove and to improve the area's ability to repair and cleanse itself naturally.

## RESULTS

A Living Machine based Lake Restorer regenerated the sick and decaying Flax Pond in Cape Cod, Massachusetts. The Restorer digested about 25,000 cubic yards of sediments and dramatically reduced the toxicity of the remaining sediments in the pond. Over the past several years the biological diversity of the 12-acre pond has increased threefold. Further, the pond is now open for recreation and swimming despite the fact that the original source of pollution, a landfill site, continues to send 23,000 gallons of pollutants into the water a day.

The Brigantine Cove project will be about ten times the size of the Flax Pond Lake Restorer and will rely on Canadian marine technology for flotation and containment.

## TECHNOLOGY OPPORTUNITIES

Lake Restorer projects currently under design or study include the Brigantine Cove project and a system for a coastal lake affected by urban life in California. Potential markets

include public and private swimming areas as well as unhealthy ponds, lakes and rivers. The restorer may also be used to treat leachate or run-off from land-fill sites and agricultural activities as well as to polish effluent from existing treatment systems, to maintain drinking water reservoirs and to treat storm water and urban run-off.

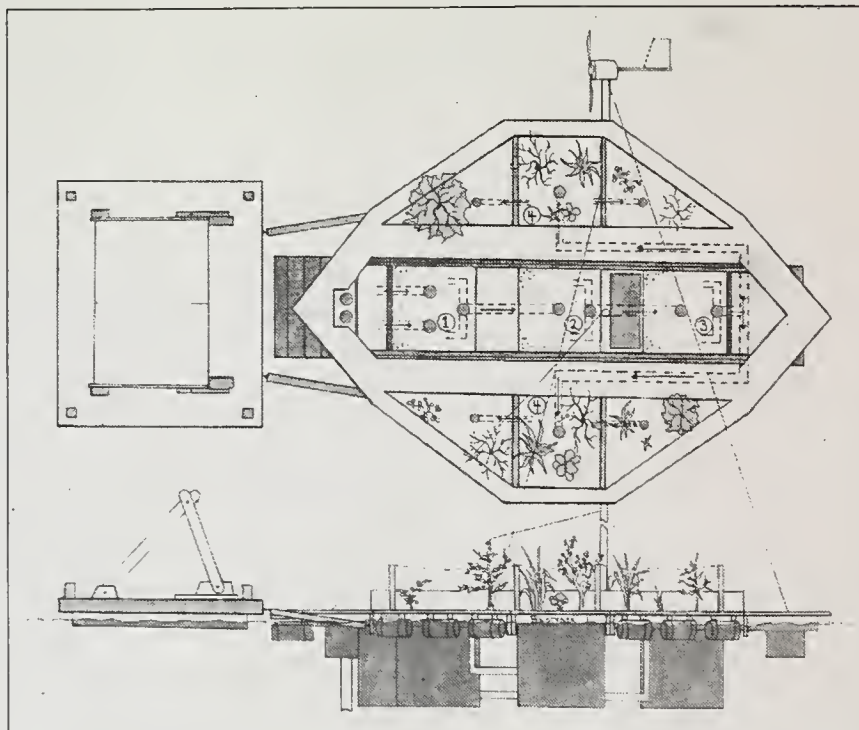
## PARTNERSHIP IN POLLUTION PREVENTION AND RESOURCE CONSERVATION

Funding for the feasibility and design stage of the Brigantine Cove project came from the Ontario Ministry of Environment and Energy, Environment Canada's Great Lakes 2000 Cleanup Fund and the Living Technologies Corporation.

Industrial companies located in Ontario may participate in ministry/industry programs which will help them:

- \* reduce, reuse and recycle solid waste;
- \* effectively remediate historic pollution and destroy hazardous contaminants;
- \* reduce or eliminate liquid effluent and gaseous emissions;
- \* use energy and water more efficiently.

Equipment and services supply companies may benefit from the information provided on technologies identified for business development.



*Flax Pond Lake Restorer showing a photovoltaic panel for powering the airlift pumps. The mast supports a windmill for the same purpose.*

## FOR FURTHER INFORMATION, PLEASE CONTACT:

Andrew Hellebust  
Project Engineer  
Living Technologies Corporation  
1 Concorde Gate  
Suite 200  
Toronto, Ontario  
M3C 3N6  
Tel: (416) 445-0647  
FAX: (416) 445-2728

Doug Vallery  
Industry Conservation Branch  
Ontario Ministry of  
Environment and Energy  
56 Wellesley St. W.  
14th Floor  
Toronto, Ontario  
M7A 2B7  
Tel: (416) 327-8329  
FAX (416) 327-1261

## MINISTRY OF ENVIRONMENT AND ENERGY PROGRAMS

For information on Ministry of Environment and Energy assistance to industry, please contact the Industry Conservation Branch at (416) 327-1492, Fax (416) 327-1261

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Renseignements en français:  
Ministère de l'Environnement et de l'Énergie  
56 rue Wellesley ouest, Toronto, Ontario M7A 2B7  
Téléphone : (416) 327-1253 ou Télécopieur : (416) 327-1261

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